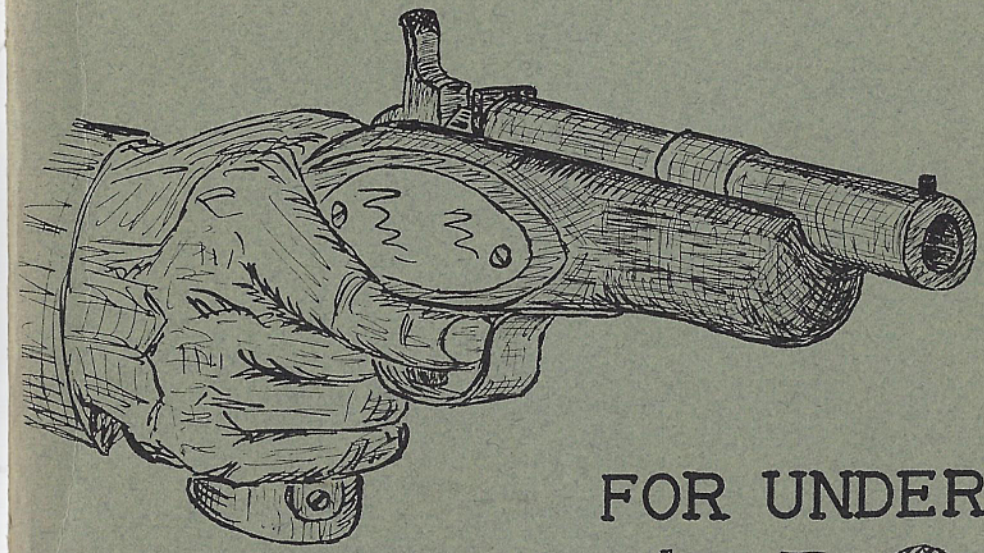
A MUZZLE LOADING PISTOL YOU CAN BUILD



FOR UNDER $10

by R.H. McCrory

PARTS LIST

1.	Barrel, .44 Caliber, 8" long, Dixie Gun Works, Union City, Tenn.	2.50
2.	Breech Plug, ½-20, machine bolt, ¾" long, local hardware store,	.20
3.	Nipple, standard Kentucky type, ¼-28 thread, Dixie Gun Works,	.40
4.	Barrel Attach Angle, common angle iron 1"x1"x1/8" scrap metal dealer, welding shop or hardware store, Per foot about	.40
5.	Barrel Band, sheet brass about 1/32" thick, scrap metal dealer, enough brass for all brass parts, one pound about	.50
6.	Triggerguard, sheet brass about 1/16" thick,	
7.	Trigger spring, same as 5 above,	
8.	Hammer, piece of 3/8" thick iron plate about 2"x4", scrap metal dealer or welding shop,	.25
9.	Trigger, same as 8 above, cut from same piece,	
10.	Mainspring Clamp, same as 8 above or other scrap,	
11.	Mainspring, blue tempered flat spring steel 3/8" wide by 1/16" thick by 6" long, local hardware store, gunsmith or machine shop,	.50
12.	Side Plates, same as 5 above,	
13.	Stock, duelling pistol stock blank, walnut, Dixie Gun Works. If you use other wood be sure it is good strong hardwood, walnut, maple or other hard dense wood. Dixie stock blank,	1.75
14.	Ramrod, dowel 3/8" diameter, 36" length, local hardware or lumber yard,	.10
15.	Screws;	
	Triggerguard, two #6x5/8" brass oval head,	.05
	Sideplates, four #6x½" brass oval head,	.10
	Barrel & Spring, two ¼-20x2" iron flat head	.10
	Barrel Angle, one ¼-20x1¼" iron round head	.05
16.	Axles, trigger & hammer, use nails or welding rod of proper diameter,	.10
	Total	7.00

By foraging for scrap materials, even this low cost can be reduced considerably.

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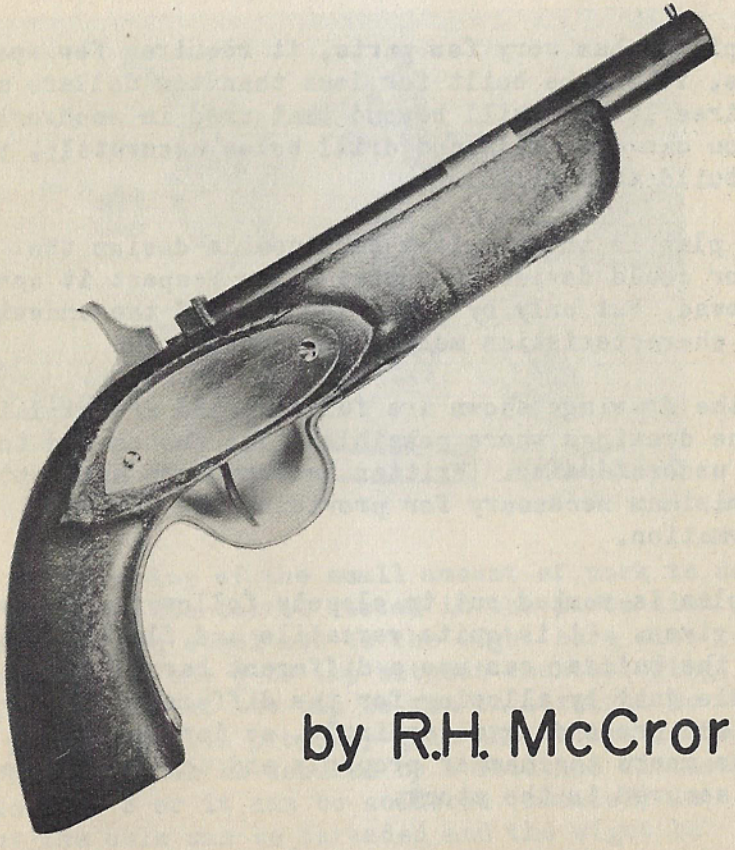

by R.H. McCrory

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A MUZZLE LOADING PISTOL YOU CAN BUILD FOR UNDER $10

In the past few years a number of articles, plans, booklets and books have offered instructions as to how to build a muzzle loading pistol. Many of these have been well written and with detailed instructions. Properly built, the resulting pistol would be a desirable reproduction of some actual antique. Without exception these plans handicapped the builder in one or more of the following ways: costly parts; required skills far beyond the ordinary; required tools not usually available; or were complicated by a great number of parts difficult and slow to make and assemble.

Our pistol has very few parts, it requires few special tools, it can be built for less than ten dollars and requires little skill beyond that used in woodworking. If you can saw, file and drill holes accurately, you can build this pistol.

This plan is the simplest serviceable design the author could devise. In most every respect it can be improved, but only by involving some of the undesirable characteristics mentioned above.

All the drawings shown are fullsize and are explained on the drawings where possible. The photos add to easy understanding. Written instructions are kept to the minimum necessary for providing the required information.

The plan is worked out to closely follow the parts list given. It is quite versatile and flexible in that the builder can use a different barrel for example just by allowing for the different diameter etc. and proceeding accordingly, so long as the nipple meets the hammer properly and the barrel is well secured in the stock.

WORKING PARTS

Photo 2 shows the various parts in a semi-finished condition. At the left is a bolt just as it was bought -and the top center shows the same type bolt converted into a breech plug. The bottom center shows the ½-20 tap used to thread the barrel to receive the breech plug. Fig. 1 is a drawing of the breech plug in detail.

The bottom left of Photo 2 shows the Clamp for the Mainspring. Fig. 2 gives detailed dimensions for this clamp. It is important that the clamp grip the spring to keep it from working and coming loose.

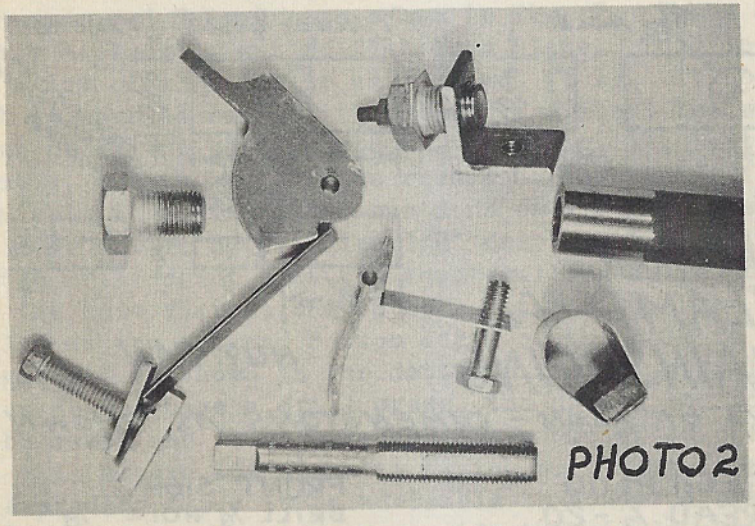
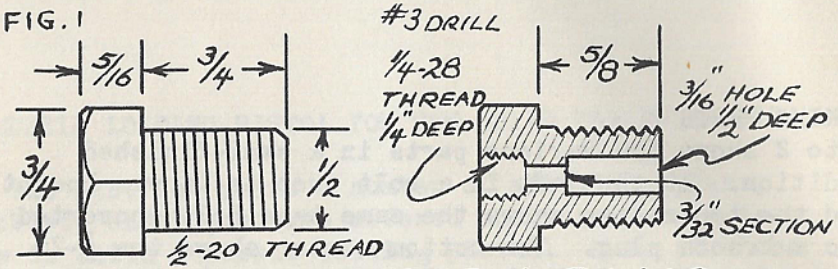


PHOTO 2

Fig. 3 is a drawing of the small amount of work to do on the barrel. The barrel listed in the parts list is made of modern steel and is the right bore size to be threaded with the ½-20 tap without counterboring. It is important that the tap be run in straight so the breech plug head will properly grip the attach angle. The front sight can be secured by a friction fit as shown in Fig. 3 or it can be soldered (sweated) in place or the hole can be threaded and the sight be screwed in.

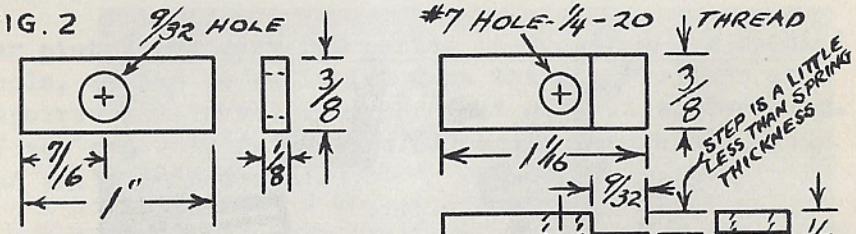
FIG. 1



BOLT - BREECH PLUG

1. CUT BOLT OFF TO 5/8" LENGTH AS SHOWN.
2. DRILL COMPLETELY THRU WITH 3/32" DRILL.
3. DRILL HEAD WITH #3 DRILL, 1/4" DEEP.
4. TAP HEAD HOLE WITH 1/4-28 THREAD.
5. DRILL OTHER END WITH 3/16" DRILL, 1/2" DEEP.

FIG. 2



CLAMP for MAINSPRING

MAKE OF IRON - DIMENSIONS AS SHOWN

BREECH PLUG
THREAD 1/2"-20
RUN TAP IN FAR ENOUGH FOR FULL 1/2" THREAD DEPTH

FRONT SIGHT
DRILL 1/8" HOLE - 1/8" DEEP- MAKE TIGHT FITTING PLUG 5/16" LONG AND TAP IN PLACE

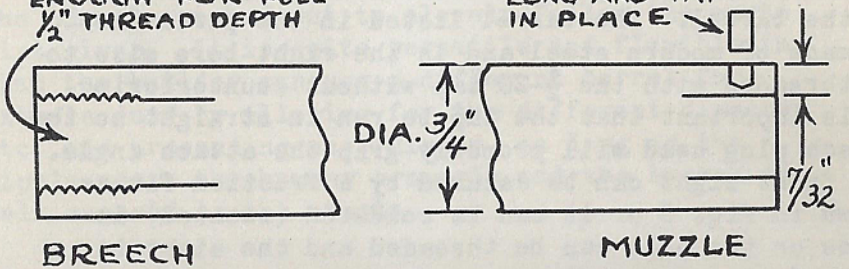


FIG. 3 BARREL WORK

The Barrel Attach Angle shown in Fig. 4 is a simple piece of angle iron which is drilled and threaded as shown. The rear sight notch is made about the width shown - or to suit the builder.

The Barrel Band in Fig. 5 is made as shown. Made of brass it adds to the looks of the pistol. It can just as well be made of iron, however.

It should be noted that a barrel with thick walls can be attached by drilling and tapping threads in holes in the bottom of the barrel, thus eliminating the angle and band. Thin barrels such as we use here should not be attached that way, however.

The Hammer and Trigger are shown in Fig. 7. These are made by hacksawing out of flat iron plate. This looks like a lot of work and to some extent it is. It took about 1½ hour to saw out the hammer and about the same amount of filing to complete it. In Fig. 12, Parts Assembly, and in Photo 5 the recess in the hammer for the nipple is shown. This was done on a drill press with a ¼" drill, by drilling 1/8" deep and then grinding the drill point flat and then drilling again to make the hole flat at the bottom. It was then redrilled at the top and bottom edges of the hole to elongate it as shown in the dotted portion of Fig. 12. If you do not have a drill press, the dotted section can be sawed and filed away and leave the sides open. This will expose the sides to flying particles from the exploding cap. It is advisable to solder a small metal strip on each side to provide the nipple shroud.

The Side Plates, Fig. 8, serve the purpose of keeping the axle pins for the hammer and trigger from working out of their holes. Made of brass they add to the appearance of the pistol. They can be made of iron or be eliminated entirely by making the pins fit tightly.

Figure 9 illustrates the Mainspring which is made of a piece of spring steel to the dimensions given. It

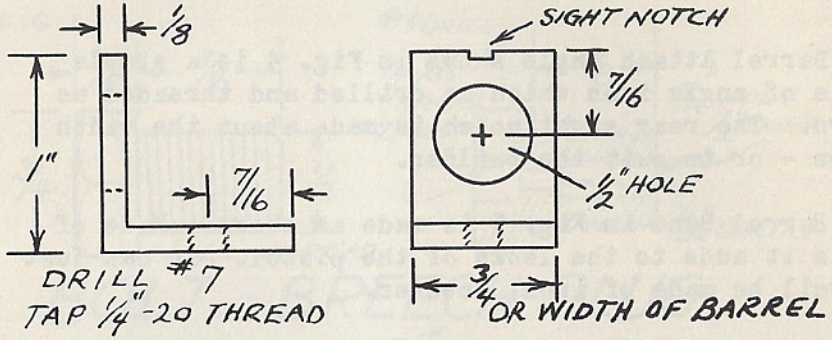


FIG. 4 BARREL ATTACH ANGLE

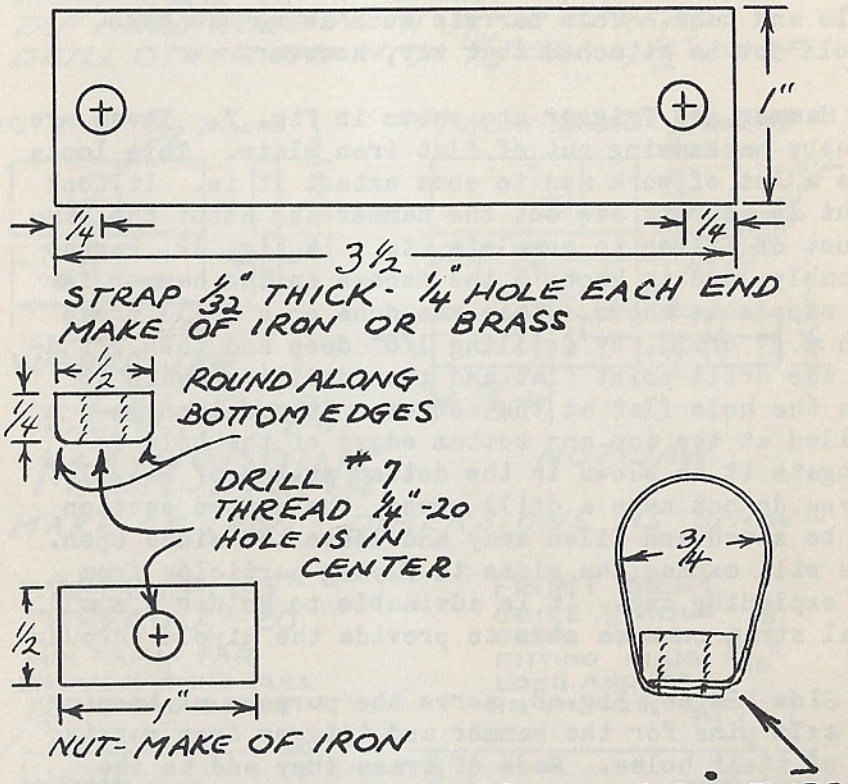
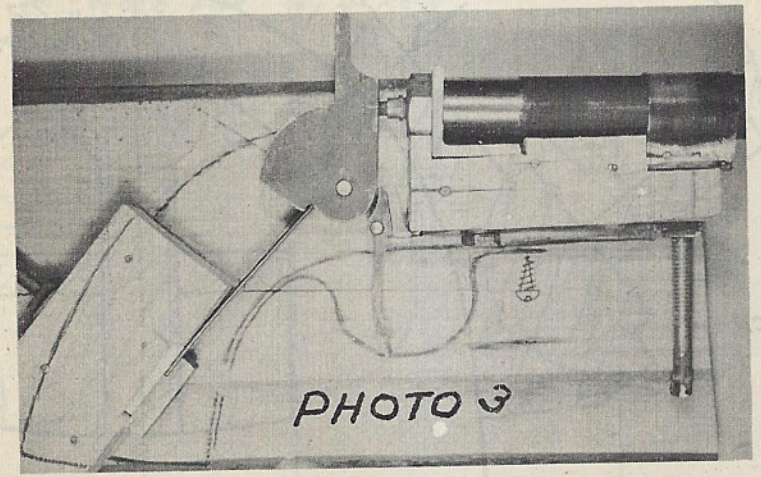


FIG. 5 BARREL BAND

is made in two parts. One leaf will fire caps, as we proved in our test assembly mock-up (Photo 3). The second leaf gives faster hammer fall and will be more reliable in ignition.

Spring steel of the type described can be bought at the larger hardware stores or perhaps from machine shops or gunsmiths. You can also make your spring from an old auto spring leaf. In that case it should be made in one piece, tapering from about 1/8" at the thick end to 1/16" at the other.



You may be able to saw or file the spring steel or, depending on the temper, it may be too hard. If so, it can be annealed by heating to a cherry red and allow to cool in air. Then you can work it. It can be hardened by heating to cherry red again and quenching in water at room temperature. It will then be too brittle for use as a spring and must be tempered or drawn. It should be polished and be heated slowly and evenly to deep blue which is about to turn gray, then cool in air. This requires some experimenting. If the spring bends in use, you heated it too much in tempering. If it breaks you didn't heat it enough. If the temper is good but it is too strong, thin it by filing lengthwise to reduce the thickness. All finish file marks should run lengthwise, since crosswise file marks promote cracking and eventual breakage.

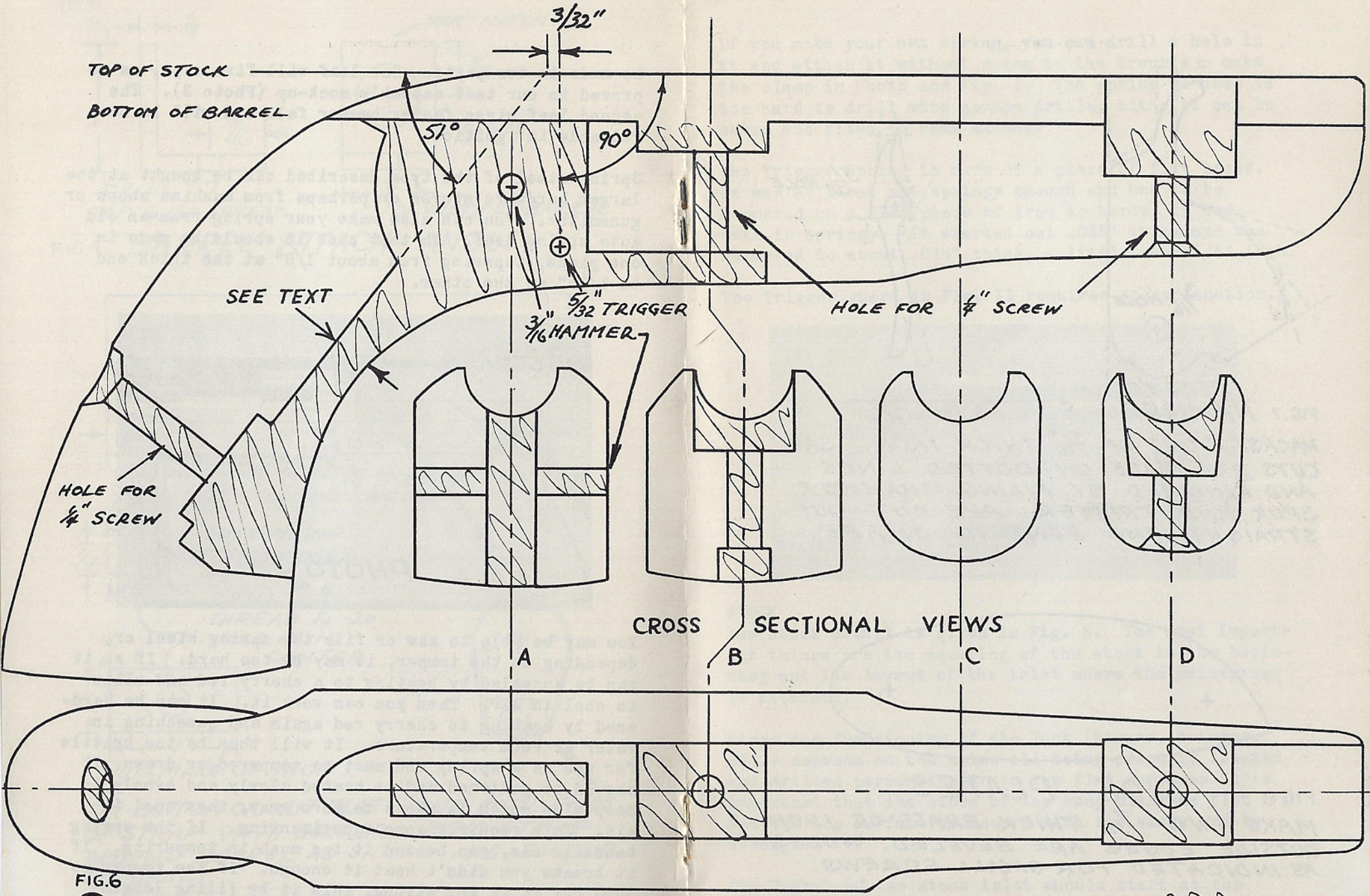


FIG.6

STOCK - FULLSIZE

INTERNAL INLETTED PORTIONS ARE SHADED

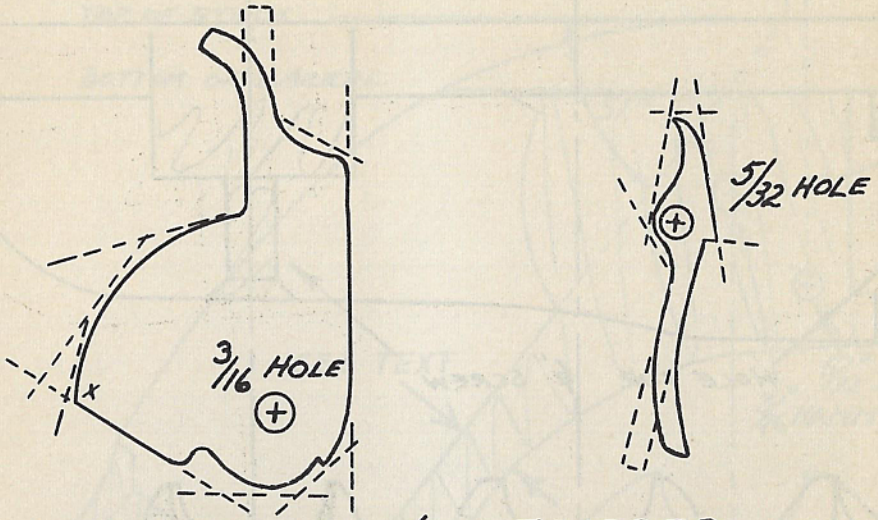


FIG.7 HAMMER & TRIGGER

HACKSAW OUT OF 3/8" THICK IRON. SAW CUTS ARE MADE ON DOTTED LINES AND FINISHED BY FILING. HAMMER SPUR AND TRIGGER ARE CUT OUT STRAIGHT AND BENT TO SHAPE.

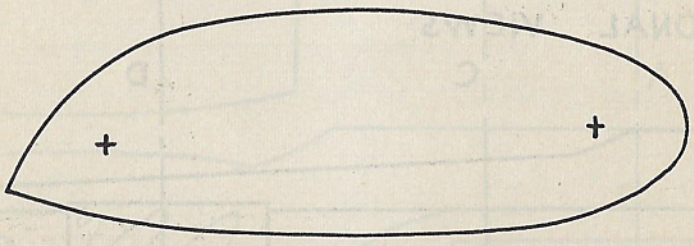


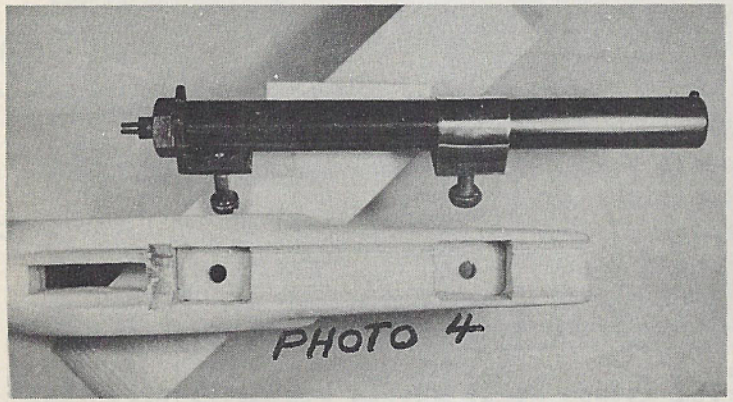
FIG.8 SIDE PLATES

MAKE TWO - 1/32" THICK BRASS OR IRON. OUTSIDE EDGES ARE BEVELED. HOLES AS INDICATED FOR SMALL SCREWS.

If you make your own spring, you can drill a hole in it and attach it without going to the trouble to make the clamp in Photo and Fig. 2. The spring we used is too hard to drill with common drills, altho it can be sawed and filed to some extent.

The Trigger Spring is made of a piece of flat brass. It was at first not springy enough and had to be hammered on a flat piece of iron to harden it and make it springy. It started out .025" thick and was hammered to about .018" thick, a little over 1/64 inch.

The Trigger guard in Fig. 11 requires no explanation.



STOCK

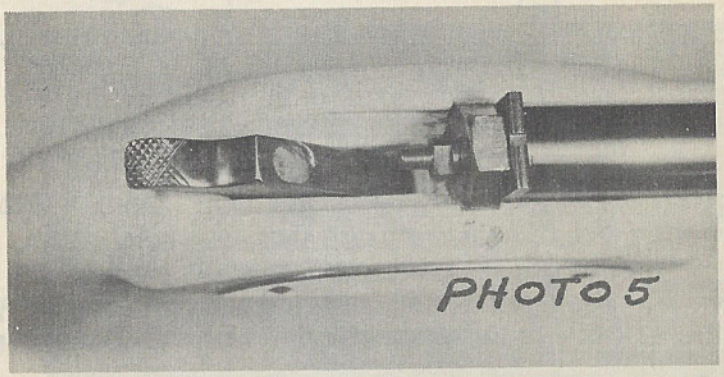
The stock detail is given in Fig. 6. The most important things are the squaring of the stock in the beginning and the layout of the inlet where the mainspring is attached.

Since the functioning of the lock (hammer, trigger, etc.) depends on the holes all being properly located and drilled perpendicular to the flat surfaces it is important that the sides of the wood blank be flat and the top surface be square with the sides and be straight.

The layout of the stock inlet should start at the point inside the grip where the third finger holds.

This is marked "see text" in Figs. 8 and 12. It is important that the dimension shown be maintained so that when the hammer is cocked, the mainspring does not interfere with the triggerguard. The dotted line position of the cocked hammer shows this in Fig. 12.

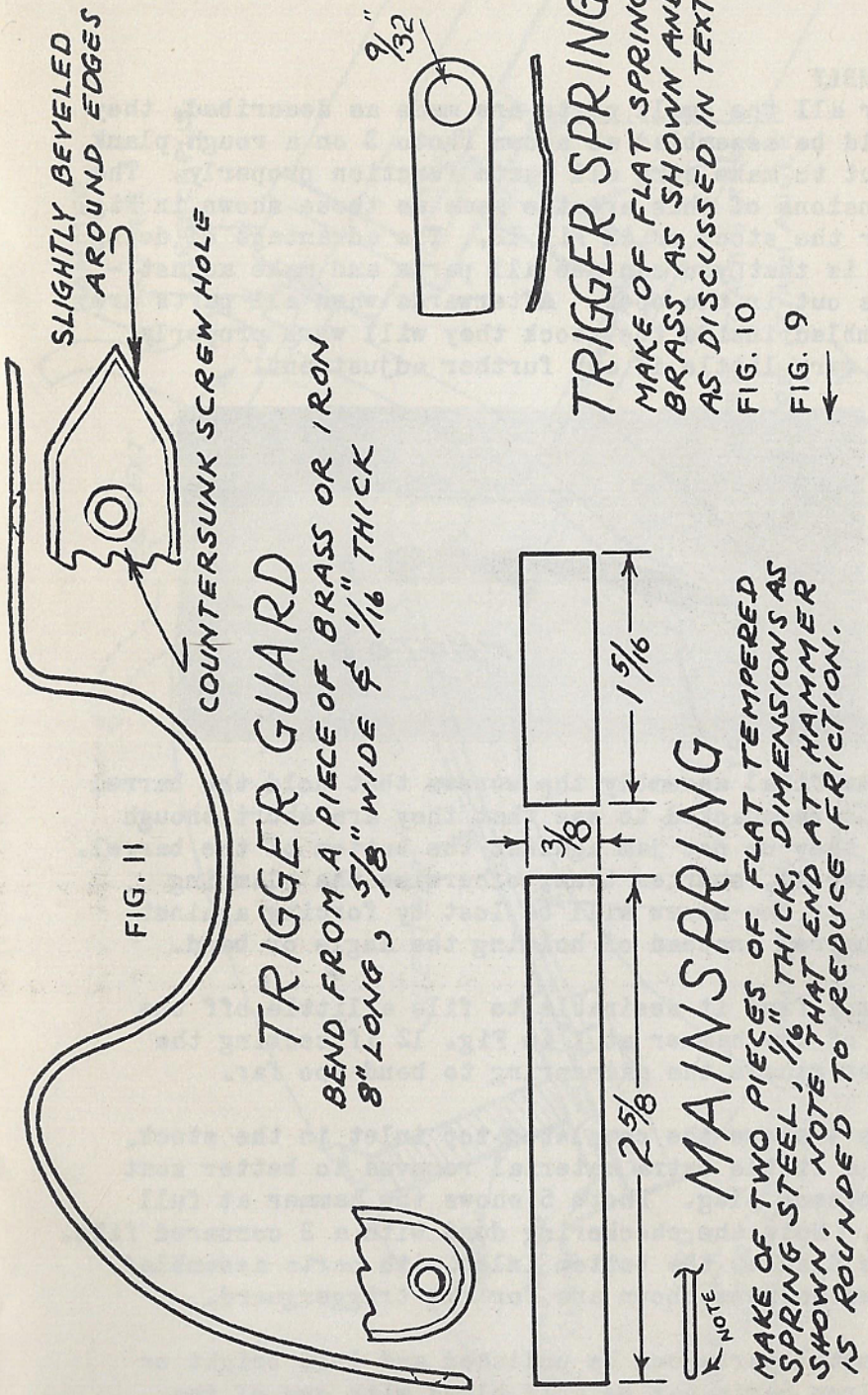
After the mainspring section is laid out the axle pins for the hammer and trigger can be located by simple measurement from Fig. 8 or be laid out with a protractor and divider. The barrel attach angle inlet is located and positioned by measurement.



The barrel attach angle should be inletted so that when its screw is tightened up securely the angle is held firmly in contact with the wood around the screw hole. At the same time the barrel should be pulled well into its inletted groove. The barrel band inlet must be deep enough that the band pulls the barrel hard into its groove without the band nut bottoming in the stock. In other words, the screw tension alone, pulling on the band should hold the barrel clamped tightly in the stock groove.

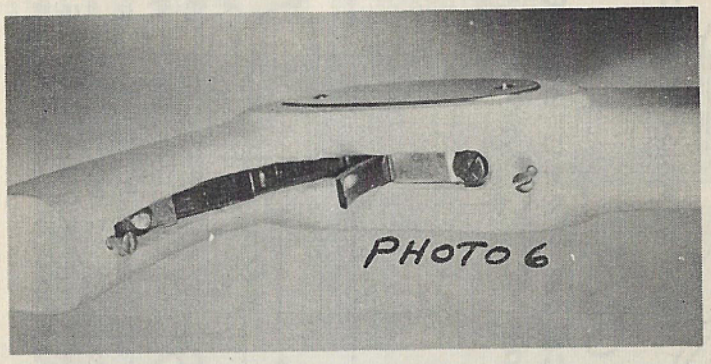
The inletting of the stock should be completed, and the lock function be tuned up before any shaping of the outside of the stock is started.

After final profiling and sanding the stock can be stained, if need be, and be varnished or oiled with boiled linseed.


SLIGHTLY BEVELED AROUND EDGES
COUNTERSUNK SCREW HOLE
TRIGGER GUARD
BEND FROM A PIECE OF BRASS OR IRON
8" LONG, 5/8" WIDE & 1/16" THICK
FIG. 11
9/32"
TRIGGER SPRING
MAKE OF FLAT SPRING BRASS AS SHOWN AND AS DISCUSSED IN TEXT
FIG. 10
3/8
1 5/16
2 5/8
MAINSPRING
NOTE
MAKE OF TWO PIECES OF FLAT TEMPERED SPRING STEEL, 1/16" THICK, DIMENSIONS AS SHOWN. NOTE THAT END AT HAMMER IS ROUNDED TO REDUCE FRICTION.
FIG. 9

ASSEMBLY

After all the small parts are made as described, they should be assembled as shown Photo 3 on a rough plank layout to make sure all parts function properly. The dimensions of this are the same as those shown in Fig. 8 for the stock or in Fig 12. The advantage of doing this is that you can see all parts and make adjust - ments out in the open. Afterwards when all parts are assembled inside the stock they will work properly with very little if any further adjustment.

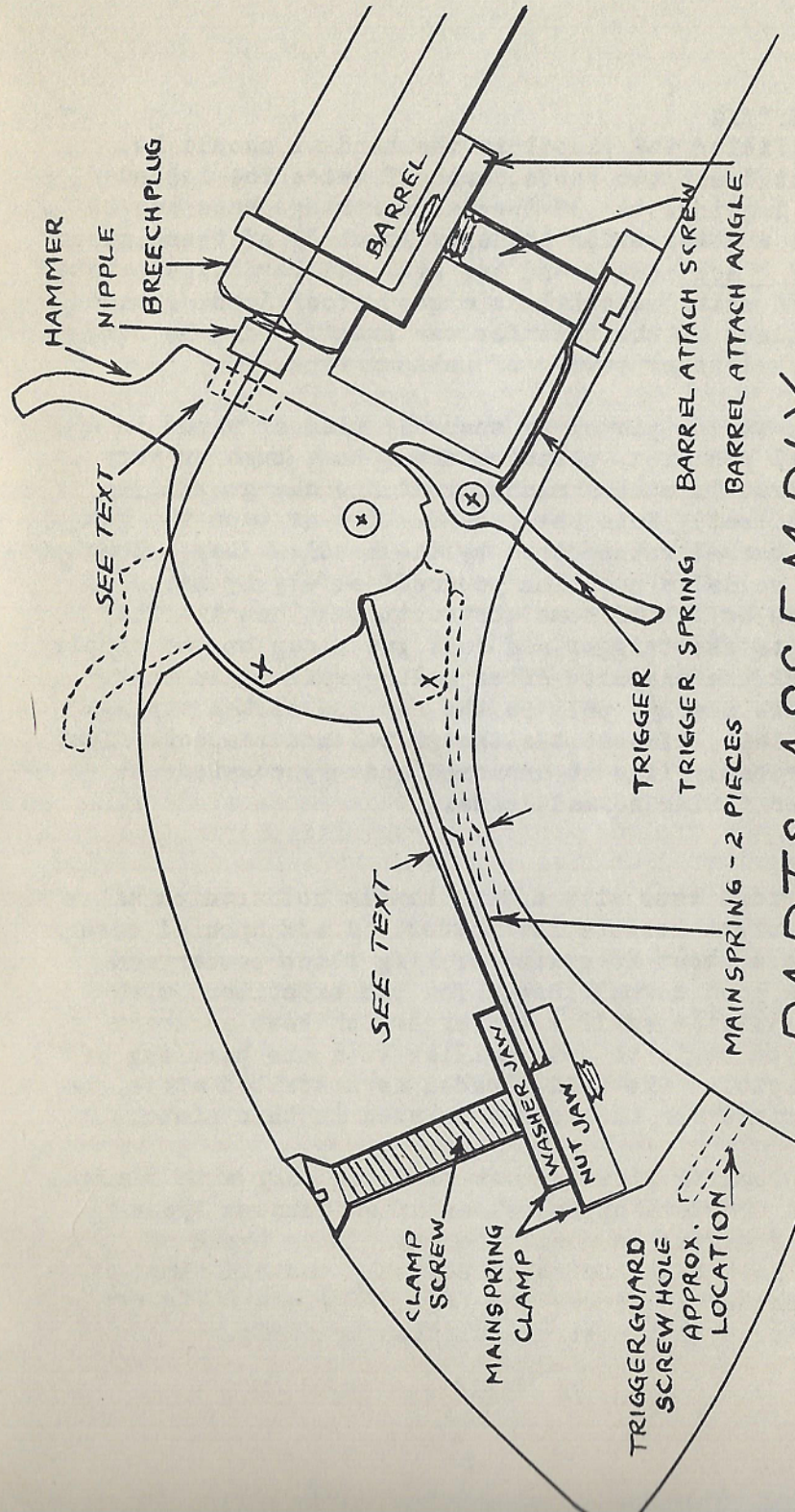


In the final assembly the screws that hold the barrel should be checked to see that they are short enough that they do not jam against the bottom of the barrel. If they do, shorten them, otherwise the clamping force of the screw will be lost by forcing against the barrel instead of holding the angle or band.

You may find it desirable to file a little off the heel of the hammer at "X" in Fig. 12 if cocking the hammer causes the mainspring to bend too far.

Photo 4 shows the completed top inlet in the stock, with a little extra material removed to better seat the breech plug. Photo 5 shows the hammer at full cock. Note the checkering done with a 3 cornered file. Photo 6 shows the bottom inlet with parts assembled. The woodscrews shown are for the triggerguard.

The metal parts can be polished and left bright or the iron parts can be cold blued with one of the various commercial preparations.



PROOFTESTING

Before firing the pistol in the hand it should be fired at least two shots, each of twice the intended normal loading. A .38 Special cartridge case can be used as a measure for powder. About 2½ of these cases full of black powder and two .435 caliber balls patched with old shirt material is a good proof load. Grade ffffg black is the best for the proof load. Do not use smokeless or powder of unknown type.

We suggest the pistol be securely tied or taped in a vertical position, pointing down, to a bush or very small tree in such a manner that the charge will be fired directly into the ground. Tie or tape the gun by the barrel rather than by the handle. Lay a long string so as to position yourself safely by means of distance or behind some obstruction. Then tie the string to the trigger and last put a cap on the nipple and cock the pistol. After making sure again that nobody is nearby, pull on the far end of the string. Repeat this, disassemble the pistol and inspect. You will probably find it unharmed and may consider it safe for firing normal loads.

SHOOTING

A cartridge case with a wire handle soldered on makes a convenient measure for powder. A .38 Special case will hold about 25 grains of fffg black powder and makes a good normal load. You can experiment with loads a little smaller or larger for best accuracy after you begin to get familiar with the handling of your pistol. One ball, loaded as described above, is about right for the barrel we used in this pistol.

Muzzle loading pistols must be fired only with Black powder. Powders of smokeless or of unknown types invite disaster in muzzleloaders. Many types of powder look black in color but only the old time black powder in grades fg, ffg, fffg, and ffffg are suitable. The finest granulation is ffffg.

CONCERNING TOOLS ---

It is doubtful that anyone ever completed making one gun and stopped there. The successful completion of the first will lead to the second and third. For this reason it is wise to buy tools of reasonably good quality. Not necessarily premium grade, but avoid the cheapest. For our purpose a very good 80¢ hacksaw blade is a better investment than half a dozen cheap ones for less than that amount. The taps we use in this project can be ordered from Sears at a total cost of about $1.25, and they are very good. Cheap screwdrivers can be fashioned into quite nice wood chisels for wood carving. You can harden and temper them as we describe for springs, but don't draw them quite to a blue color - leave them a little harder. Sharpen on an oilstone after hardening. Good drills are a good investment, not necessarily high speed steel, but good U.S. made carbon steel drills. Practically all the imported drills are of the cheapest possible quality in both materials and workmanship. Foreigners can and do make some of the finest tools and other things but most of the importers of small tools seem to be guided by low price. Fine quality imported items are not cheap and are worth the price. Some hardware stores sell factory imperfect filesat a fraction of the price of first quality. These generally have an unfinished edge which does not affect its use and as such are a good buy for us. The taps we use for threading all require a special size drill. These we quote as #3 for ¼-28 thread and #7 for ¼-20. These "number" drills, as distinguished from the more common "fractional" sizes are available at machine shop supply houses and larger hardware stores. Beware of substituting tap drill sizes, as too large a hole reduces the holding strength of the thread and too small may cause a broken tap. A poor thread holding the nipple can be dangerous. Try to make friends with someone who has most of the tools and knows how to use them. You may find it worthwhile to buy some tool item he doesn't have to contribute to the tool pool. Some very durable friendships start this way.